IN THE CLAIMS:

1. (Currently Amended) A method for aligning microbeads to be read by a code reading or other detection device, comprising:

providing microbeads to a positioning device, each microbead having an elongated body with a holographic code ~~embedded~~ disposed thereon or therein, the code being oriented to extend along a longitudinal axis of the corresponding microbead; and

aligning the microbeads with the positioning device so the codes and longitudinal axis of the microbeads are in a common fixed orientation relative to the code reading or other detection device.

2. (Currently Amended) A method according to claim 1, wherein the positioning device ~~is~~ includes a plate having a multiplicity of grooves therein, the microbeads being aligned in the grooves such that the longitudinal axis of the microbeads extends along a length of the corresponding groove.

3. (Currently Amended) A method according to claim 2, wherein the method includes agitating the plate to encourage ~~the~~ alignment of the microbeads into the grooves.

4. (Currently Amended) A method according to claim 1, wherein the microbeads are ~~cylindrically~~ tubularly shaped ~~glass beads between 25 and 250 microns in~~with a length extending along the longitudinal axis and with a circular diameter ~~and between 100 and 500 microns long~~traversing the longitudinal axis, the length being greater than the diameter.

5. (Currently Amended) A method according to claim 1, wherein the microbeads have ~~a~~ the holographic code embedded in a central region thereof.

6. (Original) A method according to claim 1, wherein the code is used to correlate a chemical content on each bead with a measured fluorescence signal.

7. (Currently Amended) A method according to claim 1, wherein the elongated body has opposite ends arranged along the longitudinal axis and sides located transversely with respect to the longitudinal axis, the positioning device holding each microbead ~~is~~ in a substantially ~~aligned~~ known fixed orientation and alignment in relation to ~~its pitch and yaw rotational axes~~an end to end pitch direction and a side to side yaw direction while permitting the microbeads to rotate in a roll direction about the longitudinal axis.

8. (Currently Amended) A method according to claim ~~1~~2, wherein the plate has a series of parallel grooves having one of ~~several different shapes, including~~a square shape, a rectangular shape, v-shaped ~~or~~ and semi-circular shape.

9. (Currently Amended) A method according to claim 2, wherein the plate is an optically transparent medium including boro-silicate glass, fused silica or plastic, and the grooves are ~~formed therein~~open sided.

10. (Currently Amended) A method according to claim 2, wherein the microbeads have a ~~circular dimension and~~tubular shape with a circular cross-section and are positioned end to end in the grooves, the grooves ~~have~~ having an open side with a depth that is dimensioned to be at least ~~the~~ a diameter of the microbeads~~, including at least 110% of the diameter of the microbead~~.

11. (Previously Presented) A method according to claim 2, wherein the microbeads have a circular dimension and either the grooves have a depth between 10 and 125 microns, the depth is dimensioned within 90% of the diameter of the microbeads, or a combination thereof.

12. (Previously Presented) A method according to claim 2, wherein the microbeads have a circular dimension and a spacing of the grooves is between 1 and 2 times the diameter of the microbeads.

13. (Currently Amended) A method according to claim 2, wherein the grooves have an open side and the microbeads, when introduced, are free to move across a side of the plate until aligning with and coming to rest in the grooves ~~a width that is dimensioned to prevent the beads from rotating therein by more than a few degrees~~.

14. (Currently Amended) A method according to claim 2, wherein the microbeads have a ~~circular dimension~~tubular shape and the grooves ~~have a width that is dimensioned within 5% of the diameter of the microbeads~~are arranged in one of rows, concentric circles and spirals.

15. (Previously Presented) A method according to claim 2, wherein the grooves have a bottom that is flat enough to prevent the beads from rotating, by more than a few tenths of a degree, relative to the code reader device.

16. (Original) A method according to claim 1, wherein the code reader device includes a readout camera.

17. (Previously Presented) A method according to claim 2, further comprising agitating the plate using a sonic transducer, a mechanical wipe, or shaking or rocking device.

18. (Withdrawn) A method according to claim 1, wherein the method includes using an open format approach by dispensing the microbeads onto the plate using a pipette tip or syringe tip and not covering the plate.

19. (Currently Amended) A method according to claim 1, ~~wherein the method includes a closed format approach by~~ further comprising dispensing the microbeads into a cuvette-like device comprising ~~the~~ a plate, at least three walls and a cover.

20. (Currently Amended) A method according to claim 19, wherein the step of dispensing includes injecting the microbeads near an edge of an opening into the cuvette-like device ~~by placing them near an edge of an opening~~ and allowing ~~the~~ surface tension, or an induced fluid flow, to pull the microbeads into the cuvette-like device.

21. (Currently Amended) A method according to claim 19, wherein the method includes using a closed format approach by sectioning a closed region into two regions, a first region where the microbeads are free to move about in a plane, either in a groove or not, and a second region where the microbeads are trapped in a groove and can only move along ~~the axes~~an axis of the grooves.

22. (Original) A method according to claim 21, wherein the method includes the step of trapping the microbeads in a groove by reducing the height of the closed region so that the microbeads can no longer come out of the groove.

23. (Original) A method according to claim 21, wherein the first region is used to pre-align the beads into a groove, facilitating the introduction of beads into the second region.

24. (Currently Amended) A method according to claim 21, wherein the method includes tilting the cuvette-like device up so gravity can be used to pull the microbeads along a groove from the first region to the second region.

25. (Original) A method according to claim 21, wherein the plate is made of silicon having walls formed by Su8 coupled thereto, or having walls formed by etching the silicon.

26. (Original) A method according to claim 1, wherein the method includes the step of identifying a chemical content on the surface of the microbead with a measured fluorescence signal.

27. (Original) A method according to claim 1, wherein the method includes passing a code reading signal through the microbead aligned on the positioning device.

28. (Original) A method according to claim 1, wherein the method further includes the step of correlating a chemical content identified on each microbead with a fluorescence signal, including one provided by an incident laser beam device.

29. (Original) A method according to claim 1, wherein the method includes the step of identifying the code in the microbead.

30. (Previously Presented) A method according to claim 2, wherein the grooves of the plate are formed using a photo lithographic process.

31. (Previously Presented) A method according to claim 2, wherein the plate includes a glass plate having Su8 thereon.

32. (Previously Presented) A method according to claim 31, wherein the glass plate is a low fluorescence glass.

33. (Withdrawn) A method according to claim 1, wherein the glass plate is a boro silicate glass.

34. (Previously Presented) A method according to claim 2, wherein the grooves on the plate are mechanically machined.

35. (Withdrawn) A method according to claim 1, wherein the grooves on the plate are formed by deep reactive ion etching.

36. (Withdrawn) A method according to claim 1, wherein the grooves on the plate are formed by injection molding.

37. (Original) A method according to claim 2, wherein the plate has a mirror coating.

38. (Original) A method according to claim 2, wherein the plate is a disk having circumferential grooves, concentric grooves, or a combination thereof.

39. (Withdrawn) A method according to claim 2, wherein the plate is a disk having radial grooves.

40. (Original) A method according to claim 2, wherein the plate is a disk having a microbead loading area located in the center of the disk.

41. (Original) A method according to claim 2, wherein the plate is a disk having one or more radial water channels extending from the center to the outer periphery thereof.

42. (Original) A method according to claim 2, wherein the method includes arranging the plate on a rotating disk.

43. (Withdrawn) A method according to claim 1, wherein the positioning device is a flow tube.

44. (Withdrawn) A method according to claim 43, wherein the step of providing includes providing the microbeads to the flow tube in a fluid.

45. (Currently Amended) A method according to claim 1, wherein the positioning device comprises a plurality of holes that receive the microbeads ~~have tubular holes extending therethrough~~.

46. (Original) A method according to claim 1, wherein the microbeads have teeth or protrusions thereon.

47. (Currently Amended) An apparatus for aligning microbeads to be read by a code reading device, comprising:

a positioning device for aligning microbeads, each microbead having an elongated body with a holographic code ~~embedded~~ disposed thereon or therein, the code being oriented to extend along a longitudinal axis of the corresponding microbead~~,~~ so the codes and the longitudinal axis of the microbeads are ~~positioned~~ held in the positioning device in a common fixed orientation relative to the code reading device.

48. (Currently Amended) The apparatus according to claim 47, wherein the positioning device ~~is~~ including a plate having a multiplicity of grooves therein, the microbeads being aligned in the grooves such that the longitudinal axis of the microbeads extends along a length of the corresponding groove.

49. (Currently Amended) The apparatus according to claim 48, wherein the apparatus includes means for agitating the plate to encourage the alignment of the microbeads into the grooves.

50. (Previously Presented) The apparatus according to claim 47, wherein the microbeads are cylindrically shaped glass beads between 25 and 250 microns in diameter and between 100 and 500 microns long.

51. (Currently Amended) The apparatus according to claim 47, wherein the microbeads have ~~a~~ the holographic code embedded in a central region thereof.

52. (Withdrawn) Apparatus according to claim 47, wherein the positioning device is a rotating disk having a multiplicity of circumferential grooves, concentric grooves or a combination thereof formed therein, or having one or more spiral grooves.

53. (Withdrawn) Apparatus according to claim 47, wherein the positioning device is a tube.

54-57. (Cancelled)

58. (New) A method for aligning microbeads to be read by a code reading or other detection device, comprising:

providing microbeads to a positioning device, wherein the positioning device comprises a groove plate with a side having a multiplicity of grooves therein to receive the microbeads, each microbead having an elongated body with a code disposed thereon or therein, the code being oriented to extend along a longitudinal axis of the corresponding microbead;

causing the microbeads to flow freely across the side of the groove plate; and

aligning the microbeads with the positioning device by moving the groove plate to cause at least a portion of the microbeads to align within the grooves so the codes and longitudinal axis of the microbeads are in a fixed orientation relative to the code reading or other detection device.

59. (New) The method of claim 1, wherein the holographic code is defined at least in part by variation of refractive index of the microbead, the refractive index varying in an axial direction along the longitudinal axis of the microbead.

60. (New) The method of claim 1, wherein the holographic code comprise a numeric code formed from a series of bits arranged proximate one another along the longitudinal axis of the microbead, each of the bits being assigned one of at least two values.